REMARKS

The Official Action mailed December 5, 2002 has been received and its contents carefully noted. Filed concurrently herewith is a *Request for Two Month Extension of Time*, which extends the shortened statutory period for response to May 5, 2002. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on September 15, 1999, December 16, 1999, April 17, 2000, December 11, 2001, December 21, 2001, March 11, 2002, and September 26, 2002. However, the Applicants have not received acknowledgment of the Information Disclosure Statement filed on January 31, 2003. The Applicants respectfully request the Examiner to provide an initialed copy of the Form PTO-1449 evidencing consideration of this Information Disclosure Statement.

Claims 1-6, 8-20, 22-34, 36-48, and 50-167 are pending in the present application, of which claims 1, 8, 15, 22, 29, 36, 43, 50, 57-60, 68-71, 79-82, 90-93, 101-104, 112-115, 123-126, 134-137, 145-148, and 156-159 are independent. All of the independent claims have been amended to better recite the features of the present invention. It is not believed that these amendments raise any new issues that would require further consideration or search and thus are believed to be appropriate for entry after final. For the reasons set forth in detail below, all pending claims are believed to be in condition for allowance.

Paragraph 2 of the Official Action cites the *Penn Yan* case and notes that the Applicants have submitted several Information Disclosure Statements to date. In response, the Applicants respectfully submit that the Information Disclosure Statements submitted to date fully comply with the rules set forth in 37 CFR §§ 1.56 and 1.97-1.99.

Paragraphs 4-12 of the Official Action reject claims 1-6, 8-20, 22-34, 36-48, and 50-167 as obvious based on the combination of various references as follows: at ¶4, either JP 04-219647 to Miyamoto or JP 04-355228 to Hirayama et al., U.S. Patent No. 4,897,829 to Ikoma et al., and either JP 63-275037 to Shinohara et al. or U.S. Patent No. 5,182,132 to Murai et al.; at ¶5, either Miyamoto or Hirayama, Ikoma, either Shinohara '037 or Murai, and either JP 01-184722 to Shinohara et al., or U.S. Patent No. 5,275,850 to Kitoh et al.; at ¶6, U.S. Patent No. 5,351,229 to Brezoczky et al.,

Ikoma, and either Shinohara '037 or Murai; at ¶7, Brezoczky, Ikoma, either Shinohara '037 or Murai, and either Shinohara '722 or Kitoh; at ¶8, JP 02-064939 to Aoyanagi et al., and "Optical Recording: A Technical Overview," pp. 132-139 (©1990), to Marchant; at ¶9, JP 63-003077 to Kugimiya, Marchant, and JP 04-265516 to Mitsuhiro; at ¶10, Aoyanagi and Ikoma; at ¶11, Kugimiya, Ikoma, and Mitsuhiro; and at ¶12, Kugimiya, Ikoma, Mitsuhiro, and JP 01-270596 to Iio et al. The Applicants respectfully submit that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present invention, as amended.

As stated in MPEP §§ 2143-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Independent claims 1, 15, 29, 43, 57, 59, 68, 70, 79, 81, 90, 92, 101, 103, 112, 114, 123, 125, 134, 136, 145, 147, 156, and 158 have been amended to recite "wherein said hard-carbon coating contains silicon and phosphorus." Independent claims 8, 22, 36, 50, 58, 60, 69, 71, 80, 82, 91, 93, 102, 104, 113, 115, 124, 126, 135, 137, 146, 148, 157, and 159 have been amended to recite "wherein said hard-carbon coating contains silicon and phosphorus at a

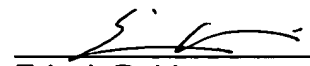
concentration of 20 atomic% or less." The prevent invention teaches that a hard-carbon coating containing silicon and phosphorus makes it difficult to charge with static electricity (see p. 5, lines 22-25). The static electricity tends to make pinholes in a thin film. The above-referenced combinations of references do not teach or suggest at least the feature of a hard-carbon coating containing silicon and phosphorus to prevent static electricity that would make pinholes. Since the prior art does not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is in order and respectfully requested.

Paragraph 14 of the Official Action provisionally rejects claims 8-14, 22-28, 36-42, 50-56, 58, 60, 69, 71-78, 80, 82-89, 91, 93-100, 102, 104-111, 113, 115-122, 124, 126-133, 135, 137-144, 146, 148-155, 157, and 159-167 under the doctrine of obviousness-type double patenting over the claims of U.S. Patent No. 6,171,674 to Yamazaki et al. As stated in MPEP § 804, under the heading "Obviousness-Type," in order to form an obviousness-type double patenting rejection, a claim in the present application must define an invention that is merely an obvious variation of an invention claimed in the prior art patent, and the claimed subject matter must not be patentably distinct from the subject matter claimed in a commonly owned patent. Also, the patent principally underlying the double patenting rejection is not considered prior art.

The Applicants respectfully traverse the obviousness-type double patenting rejection because the independent claims of the present invention are patentably distinct from the claims of Yamazaki. Specifically, as noted above, the independent claims of the present invention have been amended to recite the feature that a hard-carbon coating contains silicon and phosphorus. Yamazaki does not teach or suggest this feature of the present invention. The Applicants respectfully submit that the subject application is patentably distinct from the Yamazaki patent. Reconsideration of the obviousness-type double patenting rejection is requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



Eric J. Robinson
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.
PMB 955
21010 Southbank Street
Potomac Falls, Virginia 20165
(571) 434-6789

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend independent claims 1, 8, 15, 22, 29, 36, 43, 50, 57-60, 68-71, 79-82, 90-93, 101-104, 112-115, 123-126, 134-137, 145-148 and 156-159 as follows:

1. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

8. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

15. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

22. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating [selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] contains silicon and phosphorus at a concentration at 20 atomic% or less.

29. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an] a wavelength of 700 to 800 nm onto

said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

36. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at a [at least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has a] concentration at 20 atomic% or less.

43. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

50. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

57. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

58. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

59. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

60. (Amended) A method for operating an optically recordable disk memory comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element

has] a concentration at 20 atomic% or less.

68. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

69. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

70. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

71. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

79. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

80. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

81. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

82. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800

nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

90. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

91. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

92. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

93. (Amended) A method of operating an optical magnetic disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

101. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

102. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, and wherein said hard-carbon coating is an outermost layer of the disk and wherein said element has] a concentration at 20 atomic% or less.

103. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

104. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

112. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

113. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800

nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

114. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

115. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein

said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

123. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

124. (Amended) A method of operating a compact disk comprising the steps of:

introducing an optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

125. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a

hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

126. (Amended) A method of operating a compact disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

134. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

135. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

136. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

137. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a semiconductor laser light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

145. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

146. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element

has] a concentration at 20 atomic% or less.

147. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

148. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a laser light having [an wave length] a wavelength of 700 to 800 nm into said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

156. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film

comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

157. (Amended) A method of operating an optical disk comprising the steps of:

introducing said optical disk having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said optical disk through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less,

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.

158. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is 30/mm^2 or less, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said hard-carbon coating contains hydrogen;

wherein said hard-carbon coating contains silicon and phosphorus.

159. (Amended) A method of operating an optical disk comprising the steps of:

introducing a substrate made of an organic resin or an industrial plastic material, said substrate having a surface protected by a protective film comprising a hard-carbon coating having a thickness of 500Å or less;

irradiating a visible light onto said substrate through said hard-carbon coating;

wherein the number of pin-holes in said hard-carbon coating is $30/mm^2$ or less;

wherein said hard-carbon coating contains silicon and phosphorus at [least one of element selected from the group consisting of Si, B, N, P and F, wherein said hard-carbon coating is an outermost layer of the disk, and wherein said element has] a concentration at 20 atomic% or less.